at least one memory device electrically connected to said microprocessor and comprising a program history log for recording an occurrence of said programming event; and

a communications port, said communications port configured to receive said at least one meter input parameter for use by said microprocessor to generate output data; said microprocessor configured to create a program history log entry and configured to write said log entry into said program history log when said at least one meter parameter is received in said programming event, said program history log comprising at least one of an entry sequence number, a transaction number, a date and time stamp, and a table identifier.

Remarks

The Office Action mailed October 4, 2002 and made final has been carefully reviewed, together with the Advisory Action dated February 6, 2003, and the foregoing amendments are made in consequence thereof pursuant to the Request for Continued Examination submitted herewith.

Claims 1-22 are now pending in this application. Claims 1, 11, 12, 16 and 20 have been amended. Claims 1-22 stand rejected.

In accordance with 37 C.F.R. 1.136, a three month extension of time is submitted herewith to extend the due date of the response to the Office Action dated October 4, 2002, for the above-identified patent application from January 4, 2003, through and including April 4, 2003. A one month extension of time was request in the Amendment After Final Office Action submitted January 15, 2003. Therefore, authorization to charge a deposit account in the amount of $820.00 (the difference between the $930.00 three month extension fee and the one month extension fee of $110.00 previously charged) to cover this extension of time request also is submitted herewith.

The specification has been amended to correct a typographical error therein.

The rejection of Claims 1-3, 11-14, 16, 19-20, and 22 under 35 U.S.C. § 102(e) as being anticipated by Provost et al. (U.S. Patent No. 5,924,051) is respectfully traversed and reconsideration thereof is requested.

Provost et al. describe a demand electronic electricity meter including load profile recording capabilities. A load profile recorder (46) communicates over a control bus (40) with a microcomputer (28), and recorder (46) determines availability of on-board memory and external memory for storing recorded information. Meter programming allocates memory space to store three sets of time change log entries Provost et al. col. 4, lines 1-16. As explained by Provost et al., load profiling refers to energy consumption information stored in discrete time intervals so that a user may analyze the consumption data and modify usage to take advantage of lower rate time periods. Provost et al. col. 1, line 66 to col. 2, line 3 and col. 4, line 43 to col. 5, line 45.

In contrast, the present invention provides a secure program history log for a meter to prevent unauthorized alteration or tampering with program parameters input into the meter and used to calculate or determine, for example, energy consumption and to generate meter output data. One illustrative example of such meter parameters includes selections of quantities for load profiles. See specification paragraph 14. Thus, the present invention aims, among other things, to provide a program history log to ensure that a load profiling system, such as that described by Provost et al., utilizes authorized program parameters to generate the output data of interest. As such, unauthorized programming changes can be detected and accurate load profiling can be ensured.

The Final Office Action dated October 4 cited Provost et al. col. 4, lines 2-16 and col. 5, lines 37-45 in support of the rejection of the present claims. The Advisory Action dated February 6, 2003 states that Provost et al. col. 4, lines 13-26 teach communicating program parameters to a microprocessor during a program event. Applicants submit, however, that the programming described by Provost et al. and the programming of input parameters to which the

present invention is directed are different in purpose and effect, and that the present claims are patentably distinguishable from the teaching of Provost et al.

Specifically, Provost et al. in col. 4, lines 2-16 describe that load profile programming is input to the microprocessor (28), and that load profile programming is used to configure an available memory. Provost et al. col. 4, lines 2-16 do not describe that the load profile programming event is itself recorded and protected. In addition, Provost et al. col. 5, lines 37-45 describe that the load profile program records dates and times of power failure, and dates and times of system recovery. It is respectfully submitted that power failure and recovery times are not related to programming events wherein input program parameters used to determine energy consumption are received. Moreover, it is respectfully submitted that power failure times and recovery times are program outputs of the system described by Provost et al., rather than program inputs to which the present invention is directed.

Provost et al. state only the following with respect to programming of the meter:

> Standard tables are used to specify new values for the load profile interval length, the number of channels, scalar values, or the quantities to measure. Whenever any load profile configuration values are programmed, load profile memory will be automatically reset. If other data is programmed, but load profile configuration parameters are not, the load profile values will be unaffected.

Provost et al. col. 5, lines 24-30. It is therefore apparent that when input meter parameter configuration values are received in a programming event, previous values of the parameters are reset or unaffected in the system described by Provost et al. Provost et al. nowhere describe a program history log having entries corresponding to meter programming events wherein input parameter values are received and/or changed.

In an attempt to clarify the scope of the present claims, the claims have been amended to more clearly reflect the above considerations.

Claim 1 recites a method for creating a secure program history log for a programmable device including a microprocessor, at least one communications port for communicating with the microprocessor and at least one memory device electrically connected to the microprocessor, the memory device including "a program history log to monitor an accuracy of input program parameters." The method comprises "communicating input program parameters to the microprocessor in a programming event," "creating a log entry utilizing the microprocessor and the program parameters as the input program parameters are communicated," and "writing the log entry into the program history log utilizing the microprocessor."

Provost et al. neither describe nor suggest a program history log as described in the present specification and recited in Claim 1. Rather Provost et al. only describe resetting of load profile configuration parameters when received. Provost et al. nowhere describe programming of non-load profile parameters or recording of a programming event in a program history log when input program parameters are received.

For the reasons set forth above, Claim 1 is submitted to be patentable over Provost et al.

Claims 2, 3, and 11 depend, directly or indirectly, from independent Claim 1. When the recitations of Claims 2-3 and 11 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 2, 3 and 11 likewise are patentable over Provost et al.

Claim 12 recites a system for creating a secure program history log for a programmable device comprising "at least one communications port, said communications port configured to receive inputs comprising program input parameters in a programming event, said program input parameters employed to generate data outputs from the programmable device," "a microprocessor configured to receive said program input parameters from said communications port and create a log entry based on said program input parameters to monitor changed program input parameters," and "at least one memory device electrically connected to said microprocessor and comprising said program history log, said microprocessor further configured to write said

log entry into said program history log, thereby protecting said program history log from manipulation via direct communication from said communications port."

Provost et al. neither describe nor suggest a system for creating a secure program history log for a programmable device including a microprocessor configured to configured to receive inputs comprising program input parameters in a programming event, the program input parameters being employed to generate data outputs from the programmable device, and the microprocessor configured to create a log entry based on the program input parameters to monitor changed program input parameters. Rather, Provost et al. only describe resetting of load profile configuration parameters when received. Provost et al. nowhere describe programming of non-load profile parameters or recording of a programming event in a program history log when input program parameters are received.

For the reasons set forth above, Claim 12 is submitted to be patentable over Provost et al.

Claims 13 and 14, depend, directly or indirectly, from independent Claim 12. When the recitations of Claims 13 and 14 are considered in combination with the recitations of Claim 12, Applicants submit that dependent Claims 13 and 14 likewise are patentable over Provost et al.

Claim 16 recites an electronic electricity meter comprising "a communications port, said communications port configured to receive meter input parameters in a programming event," "a microprocessor configured to receive said meter input parameters from said communications port and determine energy consumption data outputs based upon said meter input parameters, said microprocessor further configured to create a program history log entry when meter input parameters are received in the programming event," and "at least one memory device electrically connected to said microprocessor and comprising a program history log to record changes to meter input parameters, said microprocessor further configured to write said log entry into said program history log."

Provost et al. neither describe nor suggest a meter including a microprocessor configured to create a program history log when meter input parameters used to determine energy consumption data outputs are received, the program history log recording changes to the meter input parameters. Rather, Provost et al. only describe resetting of load profile configuration parameters when received. Provost et al. nowhere describe programming of non-load profile parameters or recording of a programming event in a program history log when input program parameters are received.

For the reasons set forth above, Claim 16 is submitted to be patentable over Provost et al.

Claim 19 depends from independent Claim 16. When the recitations of Claim 19 are considered in combination with the recitations of Claim 16, Applicants submit that dependent Claim 19 likewise is patentable over Provost et al.

Claim 20 recites an electronic electricity meter comprising "a microprocessor configured to determine energy consumption output data based upon at least one meter input parameter received in a programming event," "at least one memory device electrically connected to said microprocessor and comprising a program history log for recording an occurrence of said programming event," and "a communications port, said communications port configured to receive said at least one meter input parameter for use by said microprocessor to generate output data; said microprocessor configured to create a program history log entry and configured to write said log entry into said program history log when said at least one meter parameter is received in said programming event, said program history log comprising at least one of an entry sequence number, a transaction number, a date and time stamp, and a table identifier."

For the reasons set forth above, Provost et al, neither describes nor suggests an electronic electricity meter configured to determine energy consumption output data based upon at least one meter input parameter received in a programming event, and a microprocessor configured to create a program history log entry and configured to write said log entry into said program history log when said at least one meter parameter is received in said programming event.

Rather, Provost et al. only describe resetting of load profile configuration parameters when received. Provost et al. nowhere describe programming of non-load profile parameters or recording of a programming event in a program history log when input program parameters are received.

For the reasons set forth above, Claim 20 is submitted to be patentable over Provost et al.

Claim 22 depends from independent Claim 20. When the recitations of Claim 22 are considered in combination with the recitations of Claim 20, Applicants submit that dependent Claim 22 likewise is patentable over Provost et al.

For the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 1-3, 11-14, 16, 19-20, and 22 be withdrawn.

The rejection of Claims 4-10, 15, 17-18 and 21 under 35 U.S.C. § 103 as being unpatentable over Provost et al. in view of Lightbody et al. (U.S. Patent No. 6,000,034) is respectfully traversed and reconsideration thereof is requested.

Provost et al. is described above, and as explained above, nowhere describes a program history log as described in the instant specification and recited in the instant claims.

Lightbody et al. describes a security system for a programmable revenue class electricity meter. The programming can be changed by authorized persons to modify the types of data that can be measured, calculated, recorded, displayed, communicated, and/or stored. The security system checks for a code word that is required to be input by authorized persons prior to any changes in the revenue-related programming. The security system compares the input code to a code word stored in the meter and unlocks restrictions on modification of the revenue-related programming if the input code word matches the stored code word.

While the security system described by Lightbody et al. may prevent unauthorized programming of the meter with password access to the meter program input parameters,

Lightbody et al. nowhere describe a program history log as described and recited in the instant claims.

Claims 4-10 depend from independent Claim 1, which recites a method for creating a secure program history log for a programmable device including a microprocessor, at least one communications port for communicating with the microprocessor and at least one memory device electrically connected to the microprocessor, the memory device including "a program history log to monitor an accuracy of input program parameters." The method comprises "communicating input program parameters to the microprocessor in a programming event," "creating a log entry utilizing the microprocessor and the program parameters as the input program parameters are communicated," and "writing the log entry into the program history log utilizing the microprocessor."

Provost et al. in view of Lightbody et al. neither describe nor suggest a program history log as described in the present specification and recited in Claim 1. Rather, Provost et al. only describe resetting of load profile configuration parameters when received. Provost et al. nowhere describe programming of non-load profile parameters or recording of a programming event in a program history log when input program parameters are received. Lightbody et al. describe a meter including a security system that compares the input code to a code word stored in the meter and unlocks restrictions on modification of the revenue-related programming if the input code word matches the stored code word. Neither Provost et al. nor Lightbody et al., alone or in combination, describe or suggest a program history log to monitor an accuracy of input program parameters and creating a log entry utilizing the microprocessor and the program parameters as the input program parameters are communicated. Collectively, the cited art fails to teach each limitation of Claim 1.

Claim 1 is therefore submitted to be patentable over Provost et al. in view of Lightbody et al. When the recitations of Claims 4-10 are considered in combination with the recitations of

Claim 1, Claims 4-10 are likewise submitted to be patentable over Provost et al. in view of Lightbody et al.

Claim 15 depends from independent Claim 12, which recites a system for creating a secure program history log for a programmable device comprising "at least one communications port, said communications port configured to receive inputs comprising program input parameters in a programming event, said program input parameters employed to generate data outputs from the programmable device," "a microprocessor configured to receive said program input parameters from said communications port and create a log entry based on said program input parameters to monitor changed program input parameters," and "at least one memory device electrically connected to said microprocessor and comprising said program history log, said microprocessor further configured to write said log entry into said program history log, thereby protecting said program history log from manipulation via direct communication from said communications port."

Provost et al. in view of Lightbody et al. neither describe nor suggest a system for creating a secure program history log for a programmable device including a microprocessor configured to configured to receive inputs comprising program input parameters in a programming event, the program input parameters being employed to generate data outputs from the programmable device, and the microprocessor configured to create a log entry based on the program input parameters to monitor changed program input parameters. Rather, Provost et al. only describe resetting of load profile configuration parameters when received. Provost et al. nowhere describe programming of non-load profile parameters or recording of a programming event in a program history log when input program parameters are received. Lightbody et al. describe a meter including a security system that compares the input code to a code word stored in the meter and unlocks restrictions on modification of the revenue-related programming if the input code word matches the stored code word. Neither Provost et al. nor Lightbody et al. describe a log entry based on the program input parameters to monitor changed program input parameters. Collectively, the cited art fails to teach each limitation of Claim 12.

For the reasons set forth above, Claim 12 is submitted to be patentable over Provost et al. in view of Lightbody et al. When the recitations of Claim 15 are considered in combination with the recitations of Claim 12, Claim 15 is likewise submitted to be patentable over Provost et al. in view of Lightbody et al.

Claims 17-18 depend from independent Claim 16, which recites an electronic electricity meter comprising "a communications port, said communications port configured to receive meter input parameters in a programming event," "a microprocessor configured to receive said meter input parameters from said communications port and determine energy consumption data outputs based upon said meter input parameters, said microprocessor further configured to create a program history log entry when meter input parameters are received in the programming event," and "at least one memory device electrically connected to said microprocessor and comprising a program history log to record changes to meter input parameters, said microprocessor further configured to write said log entry into said program history log."

Provost et al. in view of Lightbody et al. neither describe nor suggest a meter including a microprocessor configured to create a program history log when program parameters are received. Rather, Provost et al. only describe resetting of load profile configuration parameters when received. Provost et al. nowhere describe programming of non-load profile parameters or recording of a programming event in a program history log when input program parameters are received. Lightbody et al. describe a meter including a security system that compares the input code to a code word stored in the meter and unlocks restrictions on modification of the revenue-related programming if the input code word matches the stored code word. Neither Provost et al. nor Lightbody et al., alone or in combination, describe or suggest the meter recited in Claim 16.

For the reasons set forth above, Claim 16 is submitted to be patentable over Provost et al in view of Lightbody et al. When the recitations of Claims 17-18 are considered in combination with the recitations of Claim 16, Claims 17-18 are likewise considered to be patentable over Provost et al. in view of Lightbody et al.

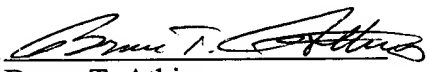
Claim 21 depends from independent Claim 20, which recites an electronic electricity meter comprising "a microprocessor configured to determine energy consumption output data based upon at least one meter input parameter received in a programming event," "at least one memory device electrically connected to said microprocessor and comprising a program history log for recording an occurrence of said programming event," and "a communications port, said communications port configured to receive said at least one meter input parameter for use by said microprocessor to generate output data; said microprocessor configured to create a program history log entry and configured to write said log entry into said program history log when said at least one meter parameter is received in said programming event, said program history log comprising at least one of an entry sequence number, a transaction number, a date and time stamp, and a table identifier."

Provost et al. in view of Lightbody et al. neither describes nor suggests the electronic electricity meter recited in Claim 21. Rather, Provost et al. only describe resetting of load profile configuration parameters when received. Provost et al. nowhere describe programming of non-load profile parameters or recording of a programming event in a program history log when input program parameters are received. Lightbody et al. describe a meter including a security system that compares the input code to a code word stored in the meter and unlocks restrictions on modification of the revenue-related programming if the input code word matches the stored code word. Neither Provost et al. nor Lightbody et al., alone or in combination, describe or suggest creation of a program history log for recording an occurrence of said programming event, and writing a log entry into the program history log when at least one meter parameter is received in the programming event.

For the reasons set forth above, Claim 20 is submitted to be patentable over Provost et al. When the recitations of Claim 21 are considered in combination with the recitations of Claim 20, Applicants submit that Claim 21 is likewise patentable over Provost et al. in view of Lightbody et al.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Ouellette et al.

Serial No.: 09/682,144

Filed: July 26, 2001

For: METHODS AND APPARATUS FOR SECURE PROGRAMMING OF AN ELECTRICITY METER

Art Unit: 2857

Examiner: Kim, Paul L.

SUBMISSION OF MARKED UP PARAGRAPHS AND CLAIMS

Hon. Assistant Commissioner for Patents
Washington, D.C. 20231

In furtherance of the Request for Continued Examination and the response to the Office Action dated October 4, 2002 and made final and the Advisory Action dated February 6, 2003 submitted herewith, Applicants hereby submit the following marked up versions of the amendments therein.

IN THE SPECIFICATION

Please replace paragraph [0014] with the following paragraph:

[0014] In one embodiment, program history log 14 comprises entries or records 16 of an identifiable type. In another embodiment, program history log comprises a more general event or security program history log 18 (shown in Figure 2), which includes records 16 of an identifiable type and other general event records 20. In yet another embodiment, program history log 14 is contained in a separate memory element 22 within meter 10. In each of these embodiments, parameters of meter 10, including but not limited to, for example, selections of quantities for load profiles, real-time pricing schedules, and time of use metering mode parameters are programmed into meter 10. Programming of meter parameters is performed, for

example, via an optical communications port 24, a telephone modem 26, an RS-232 port 28, or another communication port (not shown) of meter 10 according to known methods and techniques. The various programmable parameters are stored in tables 30 [is] in system memory, such as memory 22. As contemplated herein, a single programmable parameter stored in memory that is not part of a larger table 30 may be considered as being stored in a table 30 having a single parameter.

IN THE CLAIMS

1. (once amended) A method for creating a secure program history log for a programmable device including a microprocessor, at least one communications port for communicating with the microprocessor and at least one memory device electrically connected to the microprocessor, the memory device including a program history log to monitor an accuracy of input program parameters, said method comprising:

communicating input program parameters to the microprocessor in a programming event;

creating a log entry utilizing the microprocessor and the program parameters as the input program parameters are communicated; and

writing the log entry into the program history log utilizing the microprocessor.

11. (once amended) A method in accordance with Claim 1 wherein the programmable device is an electronic electricity meter, said step of communicating input program parameters to the microprocessor comprising the step of communicating meter parameters to the microprocessor for determining energy consumption data outputs.

12. (once amended) A system for creating a secure program history log for a programmable device comprising:

at least one communications port, said communications port configured to receive inputs comprising program input parameters in a programming event, said program input parameters employed to generate data outputs from the programmable device;

a microprocessor configured to receive said program input parameters from said communications port and create a log entry based on said program input parameters to monitor changed program input parameters; and

at least one memory device electrically connected to said microprocessor and comprising said program history log, said microprocessor further configured to write said log entry into said program history log, thereby protecting said program history log from manipulation via direct communication from said communications port.

16. (once amended) An electronic electricity meter comprising:

a communications port, said communications port configured to receive meter input parameters in a programming event;

a microprocessor configured to receive said meter input parameters from said communications port and determine energy consumption data outputs based upon said meter input parameters, said microprocessor further configured to create a program history log entry when meter input parameters are received in the programming event; and

at least one memory device electrically connected to said microprocessor and comprising a program history log to record changes to meter input parameters, said microprocessor further configured to write said log entry into said program history log.

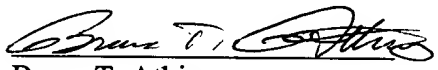
20. (once amended) An electronic electricity meter comprising:

a microprocessor configured to determine energy consumption output data based upon at least one meter input parameter received in a programming event;

at least one memory device electrically connected to said microprocessor and comprising a program history log for recording an occurrence of said programming event; and

a communications port, said communications port configured to receive said at least one meter input parameter for use by said microprocessor to generate output data; said microprocessor configured to create a program history log entry and configured to write said log entry into said program history log when said at least one meter parameter is received in said programming event, said program history log comprising at least one of an entry sequence number, a transaction number, a date and time stamp, and a table identifier.

Respectfully Submitted,



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